Claims

1. A rotor (1) of an electrical machine (10), having at least one permanent magnet (3), which is embodied as a hollow cylinder (5) and which has axial contact faces (20) that cooperate with corresponding axial clamping faces (22) of at least one retaining element (4), with which element the permanent magnet (3) is secured to the rotor (1),

characterized in that at least one of the clamping faces (22) has a knurling (46) extending in the radial direction.

2. The rotor (1) as defined by claim 1, characterized in that the knurling (46) has radial grooves (50) and axially pointed raised areas (48, 52) which extend in the radial direction.

3. The rotor (1) as defined by claim 1 or 2, characterized in that the retaining element (4) has a ring element (34), on whose axial side (28) - facing toward at least the contact face (20) - the clamping face (22) is integrally formed.

4. The rotor (1) as defined by one of the foregoing claims, characterized in that the retaining element (4) has a spring element (30, 32), which presses the clamping face (22) against the contact face (20) with a contact pressure.

5. The rotor (1) as defined by one of the foregoing claims, characterized in that the spring element (30) - in particular a cup spring (32) - is braced axially and radially on the retaining element (4) and elastically supported the permanent magnet (3).

6. The rotor (1) as defined by one of the foregoing claims, characterized in that

the radial raised areas (48, 52) engage the inside of the contact face (20) of the permanent magnet (3), in order to transmit a torque between the permanent magnet (3) and the retaining element (4) and/or to center the permanent magnet (3) radially to the rotor (1).

7. The rotor (1) as defined by one of the foregoing claims, characterized in that the permanent magnet (3) is manufactured of sintered material or plastic-bonded material and in particular contains ferrite and/or rare earth elements - preferably NdFeB.

8. The rotor (1) as defined by one of the foregoing claims, characterized in that the permanent magnet (3), at least on one of its stop faces (20), has a coating (14) - in particular of epoxy resin, nickel or aluminum - which is softer than the material (56) of the raised areas (48, 52).

9. The rotor (1) as defined by one of the foregoing claims, characterized in that the raised areas (48, 52) are manufactured of harder material (56) than the permanent magnet (3) or the coating (14) - in particular of steel or Invar - and has a coefficient of thermal expansion that is adapted to the permanent magnet (3) used.

10. The rotor (1) as defined by one of the foregoing claims, characterized in that the rotor (1) has a rotor shaft (2) and/or a rotor body (8), embodied as a magnetic short circuit (7), which are surrounded by a ring element (34) that has the clamping face (22).

11. The rotor (1) as defined by one of the foregoing claims, characterized in that the retaining element (4) - and in particular its ring element (34) - has a radial collar (36) or a radial-elastic element, on which the permanent magnet (3) is

braced for radial precentering.

12. The rotor (1) as defined by one of the foregoing claims, characterized in that the retaining element (4) is solidly fixed on the rotor shaft (2) by means of securing rings (40), spring components, laser welding, adhesive bonding, material deformation, or shrink-fitting.

13. The rotor (1) as defined by one of the foregoing claims, characterized in that the retaining element (4) is embodied as a sleeve (26) with an axial shoulder (28) on which the contact face (20) is braced.

14. The rotor (1) as defined by one of the foregoing claims, characterized in that the axial shoulder (28) is embodied as the clamping face (22).

15. The rotor (1) as defined by one of the foregoing claims, characterized in that the permanent magnet (3), on its inside face (60), has extensions (62) - especially, extensions that taper radially - with which the permanent magnet (3) is pressed against the sleeve (26) for precentering.

16. The rotor (1) as defined by one of the foregoing claims, characterized in that the retaining element (4) is embodied as a magnetic short circuit (7).

17. The rotor (1) as defined by one of the foregoing claims, characterized in that the spring element (30) is embodied as a speed nut (58), which is braced directly on the sleeve (26) and in particular rests directly on one of the contact faces (20).

18. An electrical machine (10) having a rotor (1) as defined by one of the foregoing claims, characterized in that the permanent magnet (3) cooperates with

at least one Hall sensor (72) or one electrically commutated magnetic field revolving around the rotor (1).